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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT BOESNECKER

Appeal 2009-003830
Application 10/030,870
Technology Center 2600

Decided: May 10, 2010

Before JOSEPH F. RUGGIERO, THOMAS S. HAHN, and ELENI
MANTIS MERCADER, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the Final Rejection of
claims 1-12. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the Appeal Brief (filed April 28, 2008), the Answer (mailed July 11, 2008), and the Reply Brief (filed September 11, 2008) for the respective details. Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but chose not to make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellant's Invention

Appellant's invention relates to a flat surface loudspeaker device and a method for operating the flat surface loudspeaker device in which at least one oscillating coil is mounted on a surface in the form of a plate. Upon electrical stimulation by a sound source, the surface is caused to oscillate by the oscillating coil. The acoustic frequency response of the flat surface loudspeaker is measured, a frequency curve based on the acoustic frequency response is determined, and an inverse frequency curve to the frequency curve is determined. The inverse frequency curve is simulated in a filter device as its transfer function with the filter device being connected between the sound source and the flat surface loudspeaker to compensate for the frequency response of the flat surface loudspeaker based upon the transfer function. (*See generally* Spec. ¶¶ [0018]-[0019]).

Claim 1 is illustrative of the invention and reads as follows:

1. A method for operation of a flat surface loudspeaker, in which at least one oscillating coil is mounted on a surface in the form of a plate having predetermined material characteristics, comprising:

stimulating at least one coil to oscillate electrically by a sound source;

emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil; in a measuring mode,

measuring the acoustic frequency response of this flat surface loudspeaker;

determining a frequency curve based on the measured acoustic frequency response;

determining an inverse frequency curve to the frequency curve;

simulating the inverse frequency curve in a filter device as a transfer function of the filter device; and

in an operating mode, compensating for the frequency response of the flat surface loudspeaker by the filter device, which is connected between the sound source and the flat surface loudspeaker based upon the transfer function.

The Examiner's Rejections

The Examiner's Answer cites the following prior art references:

Smith	GB 2,265,519 A	Sep. 29, 1993
Mäkivirta	EP 0,567,061 A1	Oct. 27, 1993
Azima	US 6,198,831	Mar. 6, 2001 (filed May 13, 1998)

Claims 1-6, 8, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mäkivirta in view of Azima.

Claims 7, 9, 11, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mäkivirta in view of Azima and Smith.

ISSUE

The pivotal issue before us is whether the Examiner erred in determining the obviousness to the ordinarily skilled artisan of combining the flat panel loudspeaker teachings of Azima with the loudspeaker frequency equalization teachings of Mäkivirta.

FINDINGS OF FACT

The record supports the following relevant findings of fact (FF) by a preponderance of the evidence:

1. Mäkivirta discloses (Fig. 2B, col. 5, ll. 15-26) the measurement of the frequency response, and determination of a frequency curve based on the frequency response, of loudspeaker 5.
2. Mäkivirta further discloses (col. 5, ll. 22-26) the determination of an inverse frequency curve from the determined frequency curve, and the simulation of the inverse frequency curve as a transfer function in a filter device 4.
3. Azima discloses (Fig. 3, col. 5, ll. 15-17) a flat panel loudspeaker 2 including a transducer 9 mounted on the surface of the flat panel.
4. Azima further discloses (col. 4, ll. 61-62) the “superior stereo effect” of flat panel speakers as compared to conventional speakers.
5. This “superior stereo effect” is disclosed (col. 4, ll. 52-57) by Azima as resulting from the intrinsically dispersed nature of acoustic flat panel sound radiation which “does not obey the inverse square law for distance of an equivalent point source.”

6. Azima also discloses (col. 5, ll. 58-62) that the intensity fall-off with distance is much less than would be predicted by the inverse square law for conventional speakers resulting in a superior stereo effect for off center listeners.

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966) (stating that 35 U.S.C. § 103 leads to three basic factual inquiries: the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the art). Furthermore,

‘there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

ANALYSIS

- I. *The obviousness rejection of claims 1-6, 8, and 10 based on the combination of Mäkivirta and Azima.*

With respect to independent claims 1 and 4, Appellant's arguments focus on the contention that the Examiner has not established a proper basis for the proposed combination of Mäkivirta and Azima. According to Appellant (App. Br. 11-14; Reply Br. 5-7), the membrane-type loudspeaker of Mäkivirta, with a point-like sound source, is a distinctly different type of loudspeaker than the flat panel loudspeaker disclosed by Azima and, accordingly, an ordinarily skilled artisan would be led away from combining their respective teachings.

We do not agree with Appellant. While Mäkivirta and Azima are indeed directed to loudspeakers of different structural design, both references disclose techniques for improving the quality of the output sound from their respective loudspeakers. We find, accordingly, that an ordinarily skilled artisan, seeking to improve loudspeaker output sound quality, would logically be led to the collective teachings of Mäkivirta and Azima. Discussing the obviousness of claimed combinations of elements of prior art, *KSR* explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [v. *AG Pro, Inc.*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 550 U.S. at 417.

We further find, Appellant's arguments (App. Br. 14-16; Reply Br. 8-10) to the contrary notwithstanding, that the Examiner has provided an articulated line of reasoning with a rational underpinning to support the conclusion of obviousness. As discussed by the Examiner (Ans. 4), Azima provides a teaching (FF 4) of the superior output sound quality of acoustic flat panel speakers as opposed to conventional loudspeakers.

We recognize that Appellant's arguments dispute the Examiner's characterization of the disclosure of Azima as teaching the superior sound quality of flat panel loudspeakers. According to Appellant (App. Br. 23-24; Reply Br. 9), the alleged superior sound quality appearing in the portion of Azima's disclosure relied upon by the Examiner is a result of the placement of two transducers on the sound radiating panel, and not by the fact that the speaker is a flat panel.

We find no basis, however, in the cited portion (col. 4, ll. 53-62) of Azima, or elsewhere in the document, to support Appellant's position. The cited paragraph, in comparing acoustic flat panel speakers with conventional speakers, discusses the intrinsically dispersed nature of acoustic flat panel sound radiation "which does not obey the inverse square law for distance of an equivalent point source." (FF 5). The succeeding sentence discusses the superior stereo effect experienced by off center listeners of flat panel speakers in view of the absence of the predictable diminishing of intensity because of the inverse square law as would be expected with conventional speakers. (FF 6). There is no indication that such "superior stereo effect" is a result of anything other than the flat panel speaker configuration as compared to conventional speaker configuration.

For the above reasons, the Examiner's 35 U.S.C. § 103(a) rejection of independent claims 1 and 4, as well as dependent claims 2, 3, 5, 6, 8, and 10 not separately argued by Appellant, is sustained.

II. The obviousness rejection of dependent claims 7, 9, 11, and 12 based on the combination of Mäkivirta, Azima, and Smith.

We also sustain the Examiner's obviousness rejection of dependent claims 7, 9, 11, and 12. We find no error in the Examiner's application of the sample and hold memory teachings of Smith to the combination of Mäkivirta and Azima. Appellant's arguments (App. Br. 25, Reply Br. 10) rely on those made against independent claims 1 and 4, which we have found to be unpersuasive.

CONCLUSION OF LAW

Based on the findings of facts and analysis above, we conclude that the Examiner did not err in rejecting claims 1-12 for obviousness under 35 U.S.C. § 103(a).

DECISION

The Examiner's decision rejecting claims 1-12 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

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